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ENTOMOLOGICAL NEWS

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The Genus Allaporus Banks (Hymenoptera, Pompilidae): Notes and Descriptions

By HOWARD E. EVANS, Kansas State College, Manhattan, Kansas

The curious North American Pompilid genus *Allaporus* has been considered to contain but a single species, the several other described species having been correctly placed in synonymy with *rufiventris* Cresson by Bradley (1944). Recently, however, several specimens have come to my attention which are undoubtedly specifically distinct from the widely distributed *rufiventris*, and represent two new species which are here described. Both of these are at present known from the female sex only. The species of *Allaporus* now known may be separated by the following key.

KEY TO THE SPECIES OF ALLAPORUS (FEMALES)

1. Vertex distinctly extended above the tops of the eyes, the posterior ocelli about equidistant from each other and from the crest of the vertex, which is quite sharp; mandibles unusually broad, somewhat angled about one-third the distance from the base, thereafter flat and polished..... *amabilis* new species

Vertex not or scarcely extended above the tops of the eyes, the posterior ocelli much nearer the vertex than to one another; mandibles normal, not modified as above.....2

2. Front femora slightly incrassate, their maximum width about .4 their length; crest of the vertex rather sharp; front only slightly convex in profile, below forming a prominence on the lower side of which are located the antennal orbits ..... *mexicanus* new species

Front femora not incrassate, their maximum width about .3 their length; vertex crest rounded; front strongly convex in profile view ..... *rufiventris* (Cresson)

Allaporus amabilis new species

Length 7 mm.; fore wing 5.3 mm. Color black, except as follows: abdomen ferruginous except for the extreme base of the first tergite, which is black; all the legs beyond the trochanters dusky-ferruginous; mandibles dark ferruginous; clypeus and scape with a tinge of ferruginous. Wings hyaline, lightly infuscated on the apical fourth. Entire body clothed with a fine, pale, more or less silvery pubescence.

Mandibles broad, with two weak teeth on the inner margin; shaft of mandible bent slightly inward about one-third the distance from the base, the outer portion of the mandible with a flat, shining surface, in a plane oblique to that of the clypeus when the mandibles are closed. Clypeus elevated, plate-like, about twice as broad as high, its apical margin truncate. Front broad, at the middle about .68 times the maximum width of the head; eyes converging slightly above, the distance between the eyes at the top .9 the distance between them at the bottom. Front in profile only slightly convex, the spatium frontale (the lower median part of the front, just above the antennal orbits) not prominent, not overhanging the bases of the antennae. Vertex elevated considerably above the tops of the eyes, in anterior view very slightly arched, almost straight across; crest of the vertex thin and acute. Posterior ocelli about as close to the crest of the vertex as to each other, and slightly closer to each other than to the margins of the eyes. Antennae of moderate length, the first four segments in a ratio of about 3:1:2:2; scape slender, about three times as long as thick, slightly curved.

Propodeum rather long, with a short, oblique posterior declivity, the sides of which are distinctly transversely rugulose. Front femora slender, the maximum width .25 times the length. Legs very weakly spinose for the genus, the spines on the middle and hind tibiae very minute. Apical abdominal sternite strongly compressed.

The single topotypic paratype resembles the type closely in all details, except that the legs are a somewhat brighter ferruginous.

Holotype: ♀, Potwisha, Sequoia National Park, Tulare County, CALIFORNIA, 2000–5000 feet, 2 June 1929 (E. C. Van Dyke) [California Academy of Sciences]. *Paratype:* ♀, same data as type except taken on 16 July 1931 [United States National Museum].

Allaporus mexicanus new species

Length 7.5 mm.; fore wing 5 mm. Color black, except as follows: abdomen bright ferruginous, except the extreme base of the first segment, which is black; hind femora and tibiae dusky-ferruginous; apex of mandibles dusky-ferruginous. Wings subhyaline, lightly infuscated on the apical fourth. Entire body clothed with a conspicuous pale, more or less silvery pubescence, except on the upper front, vertex, and thoracic dorsum, where it is brownish.

Mandibles of the usual shape in the Pompilinae, not modified as in the preceding species, the shaft curving gradually, the outer apical portion shining, but not presenting a broad, flat surface; inner margin with two weak teeth. Clypeus nearly three times as broad as high, its apical margin truncate, the disc not elevated but on the same plane as the lower front. Eyes very narrow, the front broad between them, in the middle about .72 times the maximum breadth of the head; inner orbits not converging above, the distance between the eyes at the top the same as at the bottom. Front in profile only slightly convex, the spatium frontale, however, quite prominent, forming a V-shaped elevation somewhat overhanging the antennal orbits. Vertex in anterior aspect straight across, in fact very slightly concave, elevated only very slightly above the tops of the eyes; crest of the vertex rather sharp. Posterior ocelli close to the vertex crest, much closer than they are to each other; post-ocellar line equal to the ocello-ocular. Antennae short, the first four segments in a ratio of about 3 : 1 : 2 : 2.3; scape stout, only slightly more than twice as long as thick.

Propodeum rather long, with an oblique, slightly concave posterior declivity, on the sides of which the propodeum is slightly transversely rugulose. Front femora slightly incrassate, the

maximum width .38 times the length. Legs moderately spinose, the middle tibiae in particular with rather strong spines. Apical abdominal sternite scarcely compressed.

The single paratype closely resembles the type, but the middle tibiae and femora are ferruginous, and the front legs brownish; it is 6.5 mm. long, the fore wing 4.5 mm.

Holotype: ♀, Cuernavaca, Morelos, MEXICO, May 1945 (H. L. H. Krauss) [United States National Museum]. *Paratype:* ♀, Brownsville, TEXAS, 8 June 1937 (R. H. Crandall) [Cornell University].

Allaporus rufiventris (Cresson)

The synonymy and a redescription of this species have been given recently by Bradley (1944). In addition to the localities cited by Bradley, I have seen this species from Pennsylvania (Pittsburgh), Georgia (Rockmart), and from Berkeley, California.

ON THE SYSTEMATIC POSITION OF ALLAPORUS

This genus was assigned by Bradley (1944) to the tribe Aporini, and placed systematically between the genera *Chelaporus* and *Rhabdaporus*. However, it differs markedly from these genera and from all Aporini in the structure of the hind wing. The radial vein is very short to the point where it meets the transverse cubital; the cubital vein is also unusually short before its junction with the transverse cubital vein; the transverse median vein leaves the anal at an angle, rather than forming an arch as in most Pompilidae. Furthermore, the anal lobe is slender, and deeply separated from the remainder of the wing. These features are not shared by any Aporini known to me; they are, however, diagnostic of certain Old World genera placed by Arnold (1936, 1937) in the tribe Idopompilini. In fact, *Allaporus* keys readily to this tribe in Arnold's key to the tribes and genera of Psammocharinae (1937, p. 75). Specimens of *Microphadnus pumilus* Costa, a member of the Idopompilini, are before me, and compare favorably with the species of *Allaporus*, although there are a number of generic characters by which they

differ. Many structural features of the body, and the venation of the fore wing, as well as the unusual venation of the hind wing, suggest a close relationship of *Allaporus* with the Idopompilini. If the Idopompilini are maintained as a tribe distinct from the Aporini, the balance of characters would appear to place *Allaporus* in the former tribe. In any event, note should be taken of the close similarity of *Allaporus* to *Microphadnus* and certain related Old World genera.

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A Collection of Xystodesmid Millipeds from Kentucky and Tennessee

By NELL BEVEL CAUSEY, Fayetteville, Arkansas

Mr. Henry Hansen collected the millipeds listed and described in this paper in the Kentucky Ridge State Forest, Pineville, Kentucky, and in the Great Smoky Mountains National Park, Tennessee–North Carolina, in June and July, 1947. Type specimens will be deposited in the collection of the Acadamy of Natural Sciences of Philadelphia.

Nannaria scutellaria Causey 1942

Great Smoky Mountains National Park: Greenbriar Cove, Double Spring Gap, Ramsey Prong, Cherokee Orchard, a site between park headquarters and Gatlinburg. Forty-eight larvae of the 4th, 6th, and 7th stadia; 43 adults. All of the larvae and some of the adults were dug from the soil.

Tucoria dynama Chamberlin 1947

Kentucky Ridge State Forest. Two males. Faded trimaculate.

Apheloria roanea Chamberlin 1947

Kentucky Ridge State Forest. One male and one female. Trimaculate; after two years in alcohol the keels are bright yellow, the median spots cream color.

Mimuloria georgiana (Bollman)

Great Smoky Mountains National Park: Rainbow Falls Trail, a site near Gatlinburg, a burnt over area on trail to Siler's Bald, Indian Gap, Greenbriar Cove, Porter Creek Flats, Double Spring Gap, Bullhead Trail, beech orchard on trail to Siler's Bald. Sixteen males, two of which were dug from the soil. The median dorsal spots in some individuals were smaller than the colored areas on the keels; in others they were low wide triangles confluent with the colored keels; and in some there was a colored band across the posterior margin of most of the tergites.

Dixioria bidens (Causey 1942)

Great Smoky Mountains National Park: Porter Creek Flats. One male.

Aporiaria deturkiana Causey 1942

Great Smoky Mountains National Park: Rainbow Falls Trail, Rocky Springs Gap, Greenbriar Cove, Double Spring Gap. Twenty-seven males, 19 females, 7 larvae. All of the larvae and some of the adults were dug from the soil.

Brachoria hansonia sp. nov.

Kentucky Ridge State Forest, Pineville, Kentucky. One male (type); length 49 mm., width 11 mm. Three females, length 51 mm., width 11 mm., from the same site are assigned tentatively to this species. The shape is typical of the genus, wide keels and moderately arched dorsum.

Color in life unknown; faded brown type suggests brightly colored keels and wide bands across posterior margin of tergites and completely around the collum. Legs and venter light.

Coxae posterior to gonopods spined. Sternum bluntly spined.

The telopodite of the gonopods (Fig. 1) has an inconspicuous transverse ridge about midway of its length. Otherwise it forms a wide smooth curve, resembling the telopodite in species of *Apheloria.* The gonopods most closely resemble those of *sequens;* in that species the telopodite is crossed by two transverse ridges, while there is only one in *hansonia.* The telopodite is sparsely setose on the outer curve below the ridge and smooth beyond it. The simple acuminate median blade is shorter than the longest of the hairs in the basal tuft.

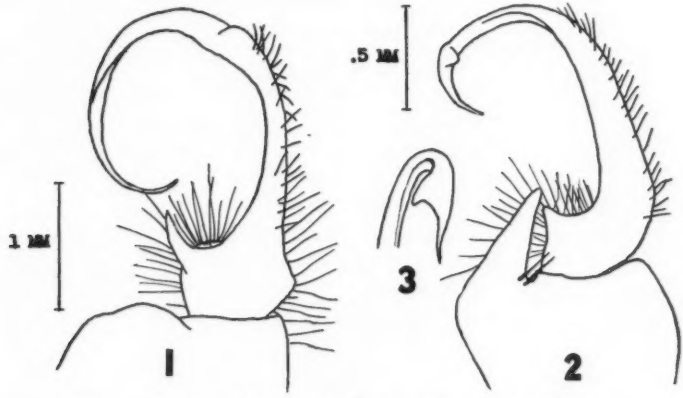

FIG. 1. *Brachoria hansonia,* left gonopod, ventro-lateral view.
FIG. 2. *Deltotaria brimleardia,* left gonopod, subcephalic view.
FIG. 3. *Deltotaria brimleardia,* end of telopodite of right gonopod, sublateral view.

Deltotaria brimleardia sp. nov.

Great Smoky Mountains National Park, Tennessee: Ramsey Prong. One male (type); length 27 mm., width 6.2 mm. The body is relatively wide and only slightly arched.

Color in life unknown. The type was dug from the soil before the adult colors had developed.

Coxae spined. Sternum not spined.

The gonopods closely resemble those of *brimleii,* but they can be distinguished by the shape of the free end of the telopodite

and the distribution of the setae on it (Figs. 2, 3) . The telopodite forms a smooth curve and ends in an acuminate process subtended by a thin rounded lobe. In *brimleii* the acuminate process is bent back toward the lobe, forming an apical hook. The middle half of the telopodite is setose on the outer curve. The large coxal peg is typical of the genus and is entirely distinct from the medial coxal hook or *hüfthörnchen*.

A Review of the Genus Pseudolithobius (Chilopoda: Gosibiidae)

By RALPH CRABILL, JR., Cornell University, Ithaca, New York

Among the material collected during the summer of 1948 by Mr. George Ball and Dr. Howard Evans, to whom I am greatly indebted, is a new member of the endemic Nearctic genus, *Pseudolithobius*. This new species is of particular interest because it is the second to be placed in the genus since its erection in 1875 by Stuxberg.

Pseudolithobius (Stuxberg)

Lithobius Stuxberg, Öfvers. K. vet.-akad. Förhandl., XXXII (2), p. 69 (1875); Ann. and Mag. Nat. Hist., XV (4), p. 190 (1875).

Lithobius (*Pseudolithobius*) Stuxberg, Öfvers. K. vet.-akad. Förhandl., XXXII (3), p. 14 (1875).—Latzel, Myr. Ost-Ung. Mon., I, p. 35 (1880).—Bollman, Bull. U. S. Nat. Mus., 46, p. 164 (1893).—Verhoeff, Bronn's Klass. u. Ord., V, p. 240 (1925).

Pseudolithobius (Stuxberg), Chamberlin, Pomona Coll. Journ. Ent. and Zool., II, p. 369 (1910); Bull. Mus. Comp. Zool. Harvard, LVII, p. 227 (1917).—Attems, in Kükenthal's Handbuch Zool., IV, p. 383 (1930).

GENOTYPE: *Lithobius megaloporus* Stuxberg, 1875 [= *Pseudolithobius megaloporus* (Stuxberg)]. Monobasic.

The present genus is distinctive within the Gosibiidae in having the last five pairs of coxae with ventral pores. All other known genera of Lithobiomorph centipedes, with the exception of the Henicopid genus, *Zygethobius,* bear coxal pores on only the last four pairs of legs. *Pseudolithobius,* which has been known since 1875 from a single species, *megaloporus,* has only been taken on the west coast of the United States. With the discovery of the new Arizonan form, *festinatus,* described below, the areal distribution of the genus is considerably increased.

Generic Diagnosis. Fulvous or reddish brown forms, ranging in size to 41 mm. Lateral head margins essentially continuous, no true marginal breaks occurring, although an indistinct line visible where the usual breaks would occur. Ocelli in two or three series; posterior ocellus largest; entire eye area small, elongate. Antennae short, consisting of twenty to twenty-two articles. Prosternal teeth recurved, 3–3 to 4–4; ectal spine setiform. Tergites rugose, roughened; the ninth, eleventh, and thirteenth produced posteriorly, or none so produced. Coxal pores on last five pairs of legs. Female gonopod claw large, entire. Basal spines stout, 2–2, 3–3, or 4–4. First article of gonopod broad, well chitinized mesally, constricted basally on inner side. Fifth article of penult and ultimate legs of the male conspicuously modified. (The penult and ultimate legs of *megaloporus* show such sexually dimorphic characteristics, it is assumed that when a male of *festinatus* is found, it too will exhibit such modifications.)

Pseudolithobius megaloporus (Stuxberg)

Lithobius megaloporus Stuxberg, Öfvers. K. vet.-akad. Förhandl., XXXII (2), p. 69 (1875); Ann. and Mag. Nat. Hist., XV (4), p. 190 (1875).

Lithobius (*Pseudolithobius*) *megaloporus* Stuxberg, Öfvers. K. vet.-akad. Förhandl., XXXII (3), p. 14 (1875); Proc. Cal. Acad. Sci., VII (1), p. 137 (1877).

Pseudolithobius megaloporus Chamberlin, Pomona Coll. Journ. Ent. and Zool., III, p. 470 (1911); Bull. Mus. Comp. Zool. Harvard, LVII, p. 229 (1917).

Dorsum brown; head darker, more reddish. Antennae short, articles twenty to twenty-two. Ocelli five to seven in two or three series. Prosternal teeth recurved, 3–3 to 4–4. Tergites nine, eleven, and thirteen with posterior outer corners distinctly pointed and produced posteriorly. The last five pairs of legs with coxal pores. Last two pairs of legs with coxae laterally armed. Ventral spinulation of the tenth to penult pairs of legs, 0, 1, 3, 3, 3, the penult legs sometimes 0, 1, 3, 3, 2. That of the first to tenth pairs of legs, 0, 0, 3, 3, 3. Ventral spinulation of the ultimate legs, 0, 1, 3, 3, 1, with two terminal claws, the second one minute. Dorsal spinulation of first to ninth pairs of legs, 0, 0, 3, 3, 2, of the tenth to the ultimate pairs of legs, 1, 0, 3, 3, 2. Basal spines of female gonopods 3–3 or 4–4.

Pseudolithobius festinatus sp. n.

Like the Californian, *megaloporus,* this new species has coxal pores on the last five pairs of legs, but it may be readily distinguished from *megaloporus* in having none of the tergites produced posteriorly and in having only the last pair of coxae laterally armed. Furthermore, *festinatus* has only two basal spines on each female gonopod as opposed to three or four in *megaloporus;* the adult female specimen of *festinatus* is only 13.5 mm. in length, and the ultimate leg spinulation is dorsally 1, 0, 3, 1, 0, ventrally 0, 1, 3, 2, 0, thus contrasting significantly with that of *megaloporus,* viz. dorsally 1, 0, 3, 2, 2, and ventrally 0, 1, 3, 3, 1.

Type. ♀; 16 miles southwest of Show Low, Navajo County, Arizona on U. S. Highway 60, August 10, 1948. (George E. Ball and Howard E. Evans; under a rock.) In author's collection; C–483.

Total length 13.5 mm.

Antennae pale yellow becoming paler distally; 21 articles; 4.3 mm. long; second article longest; last article elliptical, its length to preceding two articles in alcohol 18:19; proximal articles sparsely beset with pale setae becoming more numerous distally. *Cephalic plate* bright tan-yellow, darker than first tergite; areolate; 1.3 mm. long, as long as wide; widest at mid-length; lateral head marginal breaks essentially continuous, no

true disjunctures; very sparsely beset with setae; frontal suture distinct. *Eye* consisting of a single large ocellus, ventrally pointed, and eleven smaller ocelli arranged in three series, viz. 1–5, 4, 2; organ of Tömösvary large, located beneath anterior-most ocellus of second series; beneath anterior-most ocellus of first series a stout, dark, seta. *Clypeus* bluntly pointed at apex; with 4 apical setae, the two inner setae on apex, these stouter and longer than two outer setae which are located slightly lateral and anterior to the inner setae. *Prehensors* bright tan-yellow; each trochanteroprefemur with an incomplete oblique suture extending from inner prehensorial margin ⅕ the distance to outer margin and roughly paralleling the side of the prosternum. *Prosternum* same color as cephalic plate; areolate; distinctly split longitudinally by a pale suture. *Anterior prosternal projections* with 3–3 prosternal teeth, these triangular, blunt, a line through their apices distinctly recurved, innermost tooth smallest on side of diastema, outermost tooth longest, ectal spines setiform, longer than nearest tooth, pale, curving mesally; diastema narrowly V-shaped, slightly rounded at bottom; prosternal projections beset with dark, stout setae; distance taken between apices of outermost teeth to interval between prehensorial-trochanteroprefemoral articulations is 7:33; chitin lines distinct for entire length. *Tergites* whitish-yellow from second to about fifth, thereafter becoming darker tan-yellow; areolate; rugose; all finely punctate; no tergites produced; tenth widest; ratio of tenth plate to first is 42:35; no tergite completely surrounded by marginal elevations; first tergite with sides slightly converging posteriorly, the posterior margin very slightly medially excised, its width to head is 35:37; tergites 2, 7, 9, 11, and 13 with the posterior margins straight, posterior margins of tergites 1, 3, 5, 6, 8, 10, 12, and 14 excised, becoming more distinctly so progressing posteriorly; relative widths progressing posteriorly from first to fourteenth 35, 31, 36, 34, 37, 36, 40, 41, 37, 42, 37, 39, 35, 34. *Sternites* anteriorly whitish becoming distinctly yellow by 7th sternite; areolate; very sparsely beset with setae; sides moderately converging posteriorly; just mesad of each posterior corner is an oblique short, clear sulcus which becomes more abbreviated on succeeding

sternites until it vanishes on the fifteenth. *Coxal pores* 3, 3, 3, 3, 3; circular; small, the innermost one the smallest, the outermost two progressively of greater diameter. *Female gonopods* with the first article of each slightly excavate mesoproximally; light yellow; the inner surfaces more strongly chitinized; beset with numerous brown, long setae ventrally; basal spines 2–2 on each first article, outer spines straight, with parallel sides, the distal ⅓ gradually acuminate, equal in length to inner spines, inner spines slightly curved outward, equal in width to outer spines; gonopod claw entire, distally dark brown, strongly curved mesally. *Legs* lighter anteriorly, becoming darker yellow posteriorly, generally same color as associated tergite; only last pair of coxae laterally armed, penult and ultimate legs relatively crassate; ultimate leg femur to tibia lengths 52:60 from dorsal aspect; ultimate legs with single large claw; penult legs with minute accessory spine in addition; all other legs with apical claw plus a smaller inner claw as well as a ventral outer accessory spine; spinulation of first to sixth leg pairs $\frac{00222}{00232}$; of seventh to eleventh leg pairs $\frac{00322}{00232}$; of the twelfth leg pairs $\frac{00312}{00232}$; of the thirteenth $\frac{10311}{00332}$; of the penult $\frac{10311}{01332}$; of the ultimate $\frac{10310}{01320}$.

Two Synonymic Notes (Hemiptera: Coreidae, Corixidae)

By Roland F. Hussey, Lakeland, Florida

I

Acidomeria cincticornis Stal 1870, Enum. Hem. 1: 183.
Anasa sapiicola Hussey 1935, Bull. Brookl. Ent. Soc. 30 (1): 23. *New synonymy.*

Comparison of paratypes of my 1935 species with specimens which I determined in 1925 as *A. cincticornis* leaves me no doubt of this synonymy.

II

Students and cataloguers of the aquatic Hemiptera, without exception, appear to have overlooked the fact that Champion himself renamed his *Corixa sexlineata* in a footnote under the List of Plates on p. xvi of Volume II of the Biologia, where he wrote: "This name is preoccupied in the genus, and is here changed to *sexcincta*." Because of this oversight the species was renamed by Kirkaldy in 1909, and it was again renamed in 1927 by Jaczewski who overlooked both the previous corrections. In this country it has generally been known as *Trichocorixa naias* (Kirkaldy), and appears under this name in Sailer's recent monograph of Trichocorixa (Kans. Univ. Sci. Bull. 32: 335, 1948). The full synonymy of the species is:

Corixa sexlineata Champion, Biol. Centr.-Amer., Hem.-Het. 2: 379, Tab. XXII, fig. 22, Feb. 1901. [Name preoccupied.]

[*Corixa*] *sexcincta* Champion, op. cit., p. xvi, footnote, June 1901. [New name.]

[*Arctocorisa*] *naias* Kirkaldy, in Kirkaldy and Torre-Bueno, Proc. Ent. Soc. Wash. 10(3/4): 196, 1909. [New name for *sexlineata* Champ.]

"*C*[*orixa*]" (now with all probability *Trichocorixa*) *championi* Jaczewski, Ann. Zool. Mus. Polon. Hist. Nat. 6 (3): 257, footnote 2, 1927. [New name for *sexlineata* Champ.]

When I called this to the attention of Dr. Sailer, he replied, "The fact that Champion's note . . . has been missed by so many workers who have used this volume as a principal reference for almost half a century is most remarkable." I concur in this; but I cannot except myself from the list of those who missed it, for I used this volume of the Biologia for nearly thirty years before this footnote caught my eye.

It may be noted here that 1908 is generally cited as the date of publication of "A catalogue of American aquatic and semi-aquatic Hemiptera," by Kirkaldy and Torre-Bueno, in which Kirkaldy proposed the name *naias* for this species. It was published in the September–December, 1908, issue of the Proceedings of the Entomological Society of Washington; but Torre-Bueno noted in 1911 (Can. Ent. 43: 226, footnote) that it did not appear until June or July of 1909. The author's extras bear the date May 17, 1909.

Charles F. Adams

Dr. Charles F. Adams, M.D., 72, dipterist and Public Health official, died on January 21, 1950 at his home in Jefferson City, Missouri. From 1903 to 1908 he published on the taxonomy of Diptera, including two articles contributed to ENTOMOLOGICAL NEWS (15: 303–304; 16: 108–111), and the keys to the genera of Dexiidae and Tachinidae in the third edition (1908) of Williston's "Manual of North American Diptera." Though for many years his professional career was in Public Health Administration, as Director of Laboratories for the Indiana State Board of Health (1927–1934) and Missouri Division of Health (1934–1949), he continued his keen interest in Diptera and maintained a large collection and library. At the time of his death he was Acting Director of the Missouri Division of Health.

Dr. Adams was a kindly and lovable gentleman who will be sincerely missed by those privileged to be his friends.

CURTIS W. SABROSKY

In Behalf of Dr. Hermann Weber

The "Lehrbuch der Entomologie," published in 1933 by Dr. Hermann Weber, is generally considered to be the outstanding general text-book of our science. Dr. Weber is also known for his "Biologie der Hemipteren," without doubt the finest example of a combined morphological and biological treatment of an individual order of insects, and for his "Grundriss der Entomologie," an unsurpassed shorter text-book, now in its second edition. Dr. Weber has indeed done much for entomology and for entomologists, and he is now asking for help in order that he may continue his labors more effectively.

Undiscouraged by the loss of his library, his collection, his reprints, and all his possessions, Dr. Weber is presently engaged in preparing a second edition of his famous text-book. The scientific library facilities at Tübingen are limited, and Dr. Weber writes that he would be enormously helped if entomologists would send him reprints of their scientific papers, their recent ones as well as any they may have directed to him before 1945. In addition, papers on all zoological subjects are needed for he is collaborating with Prof. A. Kühn on a revision of the

Claus-Grobben "Lehrbuch der Zoologie," and writing the chapters on morphology and ecology and the special part except Protozoa and Coelenterata. Address: Zoologisches Institut, Hölderlinstrasse 12, (14) TÜBINGEN, French Zone, Germany. [Postage rates, from U.S.A., on reprints and books: 1½ cents for each two ounces up to 6 pounds; packages over 6 pounds go as parcel post at 14 cent per pound.]

Current Entomological Literature

COMPILED BY RAYMOND Q. BLISS AND R. G. SCHMIEDER.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the year 1949 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Bachofen-Echt, A.—Der Bernstein und seine Einschlüsse. Wien, Springer Verlag, 1949, 204 pp., 188 ill. $4.80. **Beaver, P. C. and O. K. Fletcher, Jr.**—An improved insect collecting cage. [52] 8: 176–77, ill. **Benjamin, R. K. and L. Shanor**—Discovery of dioecism in Laboulbenia formicarum (Ascomycete). [80] 111: 33–34. **Berg, C. O.**—Limnological relations of insects to plants of the genus Potomogeton. [84] 68: 279–91. **Charles, L. L.**—Léon Lhomme. (Obituary with portrait.) [Rev. Franç. de Lep.] 12: 65–67. **Curle, R.**—Arcana entomologica; or illustrations of new, rare and interesting insects. By J. O. Westwood (London 1845). [Jour. Soc. Bibliogr. Nat. Hist.] 2: 167–68. W. Wood: Index entomologicus; or a complete illustrated catalogue consisting of 1944 figures of the lepidopterous insects of Great Britain. (London, 1839.) *Ibid.* 169–70. **Gontarski, H.**—Giftige Bienenpflanzen. [Natur u. Volk] 79: 180–86. **Janse, A. J. T.**—The methods and aims of taxonomic study in entomology, with special reference to Lepidoptera. [S. Afr. Jour. Sci.] 45: 107–12. **Kalmus, H.**—Simple experiments with insects. 132 pp.,

Wm. Heinemenn, London and Toronto, 1948, 7s 6d. **Lees, A. D.**—The arthropod fauna of the soil. (Review of papers by Salt, Hollick, Raw and Brian.) [Science Progress] 37: 723–24. **Lempke, B. J.**—Rebel's edition of Berge's "Schmetterlingsbuch." [Jour. Soc. Bibliogr. Nat. Hist.] 2: 171–72. **McAtee, W. L.**—Numerical abundance as the criterion for successful species. [58] 49: 169–72. **Menozzi, C.**—In morte di Bruno Finzi. (With bibliography.) [Mem. Soc. Ent. Ital.] 20: 190–92, 1941. **Reuter, E.**—Index generum et specierum seriei Notulae Entomologica, Vol. 1 (1921)–25 (1945). [Not. Ent.] Index 1–25: 1–190. Helsengforeiae, 1949. **Richter, R.**—Einführung in die zoologische Nomenklatur durch Erläuterung der internationalen Regeln. 2 Aufl., Frankfurt a. M., 1948, 252 pp. **Röber, H.**—Insekten als Indikatoren des Mikroklimas. [Naturw. Rundschau] 2: 496–98. **Roepke, W.**—In memoriam J. P. A. Kalis (1899–1949). [Ent. Berichten, Amsterdam] 12: 425–27. **Roonwal, M. L.**—Studies in intraspecific variation. III. Body-size and biometrical ratios in various types of individuals of the desert locust Schistocerca gregaria (Forsk.). [Rec. Indian Mus.] 45: 149–65. IV. The role of some variations, e.g., eye stripes, etc., as "population indicators" in the desert locust and their practical importance. *Ibid.* 167–80. **Steering Committee, Nomenclature Discussion Group,** Washington, D. C.—Basic issues in the controversy on zoological nomenclature. [80] 110: 594. **Viette, P. E.**—R. P. Joseph de Joannis (1854–1932). (Biogr.) [Lep. News] 3: 72. **Williams, C. B.**—Insect flight and distribution. [53] 164: 904–05.

ANATOMY, PHYSIOLOGY, MEDICAL—Beatty, R. A.—Studies on reproduction in wild-type and female-sterile mutants of Drosophila melanogaster. [Proc. Roy. Soc. Edinb., B] 63: 249–70. **Beier, M.**—Körperbau und Lebensweise der Larve von Helodes hausmanni (Col., Helodid). [Eos] 25: 49–100. **Bertani, G.**—Contributo allo studio de pH intranucleare nelle cellule delli ghiandole salivari di Chironomus thummi. [Rendiconti, Cl. Sci. Mat. e Nat., Milano] 77: 427–36, 1943–44. **Bonhag, P. F.**—The thoracic mechanism of the adult horsefly (Dipt., Tabanidae). [Cornell Univ. Agr. Expt. Sta. Memoirs] 285: 1–39, ill. **Butt, F. H.**—Embryology of the milkweed bug Oncopeltis fasciatus (Hemip.). [Cornell Univ. Agr. Expt. Sta. Memoirs] 283: 1–43, ill. **Day, M. F.**—The distribution of ascorbic acid in the tissues of insects. [Australian Jour. Sci. Res.] 2: 19–30, ill. The distribution of alkaline phosphate in in-

sects. *Ibid.* 31–41, ill. Midgut epithelium regeneration as a means of studying insect digestion. [53] 164: 878–79. **Edwards, G. H.**—La determination du lieu et du mode d'action d'un agent chimique (la ryanodine) chez l'insecte. [110] 5: 92–97. **Finlayson, L. H.**—The life history and anatomy of Lepinotus patruelis (Psocoptera, Atropidae). [72] 119: 301–23, ill. **Franz, J.**—Über die genetischen Grundlagen des Zusammenbruchs einer Massenvermehrung aus inneren Ursachen. [Zeitschr. f. angew. Ent.] 31: 228–60. **Froussart**—Essai de fabrication de cartons à insectes. [110] 5: 111–14. **Gantès, H.**—Morphologie externe et croissance de quelques larves de Formicides. [Bull. Soc. d'Hist. Nat. l'Afr. Nord] 40: 71–97. **Goodwin, T. W. and S. Srisukh**—The biochemistry of locusts, I. The carotenoids of the integument of two locust species (Locusta migratoria migratorioides and Schistocerca gregaria). [Biochem. Jour.] 45: 263–68. **Hammond, G. H.**—Soil pH and intensity of Phyllophaga infestation. [79th Ann. Rpt. Ent. Soc. Ont.] pp. 13–18. **Heller, J. and W. Swiechowska**—Investigations on insect metamorphosis. Pt. XIII—The macroscopical aspect of metamorphosis (Lep., Sphingid.). [Zool. Poloniae] 4: 73–82, 1948. **House, H. L. and M. G. Traer**—An artificial food for rearing Pseudosarcophaga affinis, a parasite of the spruce budworm Choristoneura fumiferana. [79th Ann. Rpt. Ent. Soc. Ont.] pp. 50–53. **Iuoff, N. A.**—A consideration of embryological development of ichneumons (Pseudophycus sp.). (In Russian.) [22] 60: 1477–80, ill., 1948. **Kalina, B. F.**—Development and viability of Drosophila melanogaster on a medium containing DDT. [80] 111: 39–40. **Khalifa, A.**—The mechanism of insemination and the mode of action of the spermatophore in Gryllus domesticus. [74] 90: 281–92. Spermatophore production in Trichoptera and some other insects. [88] 100: 449–471, ill. **Kowarzyk, H. and J. Rymar**—The experimental aberrations of Vanessidae (Lepid.). [Zool. Poloniae] 4: 83–106, ill., 1948. **Krombein, K. V.**—Two new gynandromorphs, with a list of previously recorded sexual aberrations in the scolioid wasps. [71] 100 (3257): 55–59. **Kühnelt, W.**—Über Vorkommen und Verteilung reduzierender Stoffe im Integument der Insekten. [Österr. Zool. Zeitschr.] 2: 223–41. **Lecomte, J.**—L'interattraction chez l'Abeille. [C. R. Acad. Sci., Paris] 229: 857–88. **Lees, A. D.**—Polarization of light as a factor in the orientation of the honey bee. (A review of papers by K. v. Frisch in Naturwiss. 35: 12, 38 and in Experientia 5: 142) [Science

Progress] 27: 721–23. **Levinson, L. B.**—Neuro-secretory cells of honey bees. (In Russian.) [22] 60: 129–32, ill., 1948. **Ludwig, C. E.**—Embryology and morphology of the larval head of Calliphora erythrocephala. [50] 14: 75–111. **Mittelstaedt, H.**—Telotaxis und Optomotorik von Eristalis bei Augeninversion. [Die Naturwiss.] 36: 90–91. **Morrison, F. O. and W. F. Oliver**—The distribution of radioactive arsenic in the organs of poisoned insect larvae. [24] Sect. D, 27: 267–69. **Müller, H. J.**—Zur Systematik und Phylogenie der Zikaden-Endosymbiosen. [Biol. Zentralbl.] 68: 343–68. **Newman, J. F., M. A. Aziz and T. Koshi**—Studies in contact toxicity. Pt. I. Resistance of successive generations of Culex fatigans Wied. to contact insecticides. [Proc. Indian Jour. Sci.] 30: 61–68. **Rubtsov, I. A.**—Concerning the morphological meaning of the external sexual appendages of the two-winged flies (Diptera). (In Russian.) [22] 60: 1601–03, 1948, ill. **Schremmer, F.**—Morphologische und funktionelle Analyse der Mundteile und des Pharynx der Larve von Anopheles maculipennis. [Österr. Zool. Zeitschr.] 2: 173–222, ill. **Schremmer, Felicitas**—Bemerkungen zur Ocellenfunktion bei Hummeln. [Österr. Zool. Zeitschr.] 2: 242–74. **Scoggin, J. K. and O. E. Tauber**—The bionomics of Dermestes maculatus. I. Oviposition longevity and period of incubation. [Iowa State Coll. Jour. Sci.] 23: 363–73. **Shvanich, B. N.**—Concerning the wing patterns in the thick-headed butterflies (Hesperiidae). (In Russian.) [22] 59: 789–92, illus., 1948. **Stüber, M.**—Zur Biologie der Chalcide Encarsia tricolor. [Biol. Zentralbl.] 68: 413–29. **Thorpe, W. H. and D. J. Crisp**—Studies on plastron respiration. IV. Plastron respiration in the Coleoptera. [40] 26: 219–60, ill. **Vogt, M.**—Fettkörper und Önocyten der Drosophila nach Exstirpation der adulten Ringdrüse. [Z. Zellforsch.] 34: 160–64. **Walker, E. M.**—The anatomy of Grylloblatta campodeiformis. 5. The organs of digestion. [24] sect. D, 27: 309–44. **Weis-Fogh, T.**—An aerodynamic sense organ stimulating and regulating flight in locusts. [53] 164: 873–74, ill. **Whitehouse, R. H.**—Dissection of the cockroach. London, University Tutorial Press, 1949. Pp. viii, 73. Price, 3s 9d.

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24: 464–94, ill. **Mello, Leitão, C. de e J. de Araujo Feio**—Notas sôbre pequena colecção de aracnidos do Peru. [Bol. Mus. Paraense Emilio Goeldi] 10: 313–24 (*). **Soares, B. A. A. e H. F. de Almaeda Carmago**—Aranhas coligidas pela Fundação Brasil-Central (Araneae). [Bol. Mus. Paraense Emilio Goeldi] 10: 355–409, ill.

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ORTHOPTERA—Darbois, M.—Comparaison des oeufs de trois espèces de Grillons et leurs hybrides. [C. R. Acad. Sci., Paris] 229: 903–05. **Goodwin and Srisukh**—(See under Anatomy.) **James, H. J.**—The distribution in Ontario of the European mantis, M. religiosa. [79th Ann. Rpt. Ent. Soc. Ont.] p. 41. **Jhingran, V. G.**—Early embryology of the desert locust, Schistocerca gregaria. [Rec. Indian Mus.] 45: 181–200, ill. **Johnston, H. B. and D. R. Buxton**—Field observations on locusts in eastern Africa. [Anti Locust Bull., London] No. 5: 1–74. **Khalifa, A.**—(See under Anatomy.) **Liebermann, J.**—Sobre una coleccion de acridos argentinos del Naturhist. Mus. de Vienna. [Rep. Arg. Minist. Agr. y Gan.] 5 (46): 1–12. **Roonwal, M. L.**—(See under General.) **Walker, E. M.**—(See under Anatomy.) **Weis-Fogh, T.**—(See under Anatomy.) **Whitehouse, R. H.**—(See under Anatomy.)

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omy.) **House and Traer**—(See under Anatomy.) **Janse, A. J. T.**—The moths of South Africa. Vol. V. Gelechiadae. [Trans. Mus. Pretoria] 1949: 1–60, pls. 1–32. (Also see under General.) **Kowarzyk and Rymar**—(See under Anatomy.) **Querci, O.**—An attempt to explain the development of Pieris rapae at Philadelphia during the year 1932. [29] 61: 124–26. **Schmitz, G.**—La pyrale du Cafeier robusta Dichocrocis crocodora. Biologie et moyens de lutte. [Publ. I. N. E. A. Congo, ser. sci.] No. 41: 1–132. **Schwanwitsch, B. N.**—Evolution of the wing-pattern in the Lycaenid Lepidoptera. [72] 119: 189–263, ill. **Shvanvich, B. N.**—(See under Anatomy.) **Sperry, J. L.**—Geometrid notes, a new genus and species from Arizona. [18] 44: 158–62. **Strympl, A.**—Vinte e seis anos caçando Agrias na Amazonia. [Bol. Mus. Paraense Emilio Goeldi] 10: 185–209. **Torre, S. de la**—Estudio de las subspecies cubanas de Axia monuste (Pierid). [Mem. Soc. Cubana Hist. Nat. Felipe Poey] 171–75, ill. Datos taxonómicos sobre Lepidopteros, con notas sobre algunas especies cubanas. *Ibid.* 177–90. Género y especies de la subfamilia Heliconiinae hallado en Cuba. *Ibid.* 191–94. Sobre la pesencia en Cuba de Papilio troilis iloneus. *Ibid.* 195–96.

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Hill, R. B. and C. McD. Hill—The mosquitoes of Jamaica. [Bull. Inst. Jam.] Sci. ser., No. 4: 1–60, ill. **House and Traer**—(See under Anatomy.) **Hoyt, C. P.**—Another record of Flebotomus from California. [60] 25: 171. **Hull, F. M.**—The morphology and inter-relationships of the genera of Syrphid flies, recent and fossil. [Trans. Zool. Soc. London] 26: 257–408, ill. (k). Studies upon Diptera in the British Museum. [6] ser. 12, 2: 727–46. **Kalina, B. F.**—(See under Anatomy.) **Lees, A. D.**—Eradication and control of mosquitoes. [Sci. Progress] 37: 718–21. **Ludwig, C. E.**—(See under Anatomy.) **Masters, C. O.**—A study of the proportions of male and female mosquitoes immediately after emergence. [58] 49: 188–90. **Penn, G. H. and S. A. Coleman**—An analysis of pupal chaetotaxy in Anopheles quadrimaculatus. [52] 8: 174–75, ill. **Reeves, W. C., B. Brookman and W. McD. Hammon**—Studies on the flight range of certain Culex mosquitoes, using a fluorescent dye marker, with notes on Culiseta and Anopheles. [52] 8: 61–69. **Rubtsov, I. A.**—(See under Anatomy.) **Satchell, G. H.**—The early stages of the British species of Pericoma (Psychodid). [88] 100: 411–47, ill. **Schremmer, F.**—(See under Anatomy.) **Stage, H. H.**—A vespid preying on Anopheles. [52] 8: 72. **Steyskal, G. C.**—Sepsidae of the Australasian region. [60] 25: 161–71 (k*). Notes on color and pattern of eye in Diptera. [18] 44: 163–65. **Stough, B. D., M. A. King and D. E. Eyles**—Extension of known range of Aedes atropalpus southward in Georgia. [52] 8: 173. **Vogt, M.**—(See under Anatomy.) **Wirth, W. W.**—A revision of the Clunionine midges with description of a new genus and four new species (Tendipedidae). [91] 8 (4): 152–82, ill.

COLEOPTERA—Anschau, M.—Über eine Eigentümlichkeit im Bau der larvalen Mandibeln beim grossen Kolbenwasserfäfer (Hydropiceus L.) und deren biologische Bedeutung. [Österr. Zool. Zeitschr.] 2: 275–81. **Bänninger, M.**—Ueber Carabinae. Ergänzungen und Berichtigunen III, mit Bemerkungen zu R. Jeannels neue Einteilung der Carabiden. [Mitth. Münch. Ent. Ges.] 35–39: 127–57. **Beier, M.**—(See under Anatomy.) **Blake, D. H.**—Notes on some West Indian Chrysomelidae. [48] 39: 367–70, ill. (*). **Britton, E. B.**—The Carabidae of New Zealand. Part III. A revision of the tribe Broscini. [Trans. Proc. Roy. Soc. N. Z.] 77: 533–81, ill. **Chamberlin, W. J.**—A South American species of Buprestidae taken in California. [60] 25: 150. **Dammerman, K. W.**—Nomina conservanda of Coleop-

tera L. [Ent. Berichten, Amsterdam] 13 (295): 11–13, 1950. **Fender, K. M.**—Studies on Cantharidae, IV. [60] 25: 185–89 (*). **Fichter, G. S.**—Necrophily vs. necrophagy. [58] 49: 201–04. **Gerini, F.**—Contributi alla studio delle forme larvali degli Stafilinidi. I. Larva di Paederus litoralis. [Mem. Soc. Ent. Ital.] 20: 184–89, 1941. **Kaszab, Z.**—Vier neue exotische Tenebrioniden. [6] ser. 12, 2: 775–82. **Kessel, E. L.**—Protoclythia, a new genus of flat-footed flies and the descriptions of two new species (Clythiidae). [Wasmann Collector] 7' 257–75 (k). **Knull, J. N.**—Three new species of Cleridae. [58] 49: 199–200. **Leech, H. B.**—New species and subspecies of nearctic water beetles (Dytiscidae and Hydrophilidae). [Wasmann Collector] 7: 243–56. **Linsley, E. G.**—A new species of Stizocera from Florida (Ceramby.). [60] 25: 153–54. **Park, O.**—New species of nearctic Pselaphid beetles and a revision of the genus Cedius. [Bull. Chicago Acad. Sci.] 8: 315–43, ill. **Pavan, M.**—Significata anatomico e funzionale dell'apparato copulatore in Morimus asper e Lamia textor (Ceramb.). [Boll. Zool. Agr. Bach.] 14: 1–25, ill., 1947. Sulla larva di Blaps gibba (Tenebr.). *Ibid.* 15: 31–36, ill., 1949. **Reichensperger, A.**—Die Paussiden Africas. [Abh. Senckenb. Naturf. Ges.] No. 479: 1–32, 1948. **Santis, L. de**—Cassididae. (See under Hymenoptera.) **Schilder, M.**—Zahl und Verbreitung der Coleoptera. [Biol. Zentralbl.] 68: 385–97. **Scoggin and Tauber**—(See under Anatomy.) **Silvestri, F.**—Distribuzione geographica del Micromalthus debilis LeConte. [Boll. Soc. Ent. Ital.] 73: 1–2, 1941. **Stehr, W. C.**—Notes of the genus Bradytus Steph. and descriptions of three new species (Carab.). [58] 49: 205–08. **Thorpe and Crisp**—(See under Anatomy.) **Van Emden, F. I.**—New and little known neotropical Carabidae. [6] ser. 12, 2: 861–93, ill. Larvae of British beetles, VII. (Coccinelidae.) [28] 85: 265–83, ill. (k). **Vogt, G. B.**—Notes on the Cerambycidae from the lower Rio Grande valley, Texas. [60] 25: 175–84.

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atoll, Marshall Islands. [60] 25: 172–74. **Doutt, R. L.**—A synopsis of North American Anaphoidea (Mymarid.). [60] 25: 155–60 (k*). **Gantes, H.**—Morphologie externe et croissance quelques larves de Formicides. [Bull. Soc. d'Hist. Nat. l'Afr. Nord] 40: 71–97, ill. (Also see under Anatomy.) **Gontarski, H.**—(See under General.) **Iuoff, N. A.**—(See under Anatomy.) **Krombein, K. V.**—(See under Anatomy.) **Lanham, U. N.**—Subspecific names for two common Pacific coast Andrena. [60] 25: 147–49. A subgeneric classification of the new world bees of the genus Andrena. [91] 8 (5): 183–238. **Lecomte, J.**—(See under Anatomy.) **Lees, A. D.**—(See under Anatomy.) **Levinson, L. B.**—(See under Anatomy.) **Santis, L. de**—Nota sobre un parásito de los desoves de Chelymorpha indigesta (Chalcid.). [Notas Mus. de la Plata] 14: 161–66. **Schremmer, Felicitas**—(See under Anatomy.) **Stage, H. H.**—(See under Diptera.) **Stüber, M.**—(See under Anatomy.)

Reviews

AMERICAN SPIDERS. By Willis J. Gertsch. D. Van Nostrand Co., New York. 1949. Pp. xiii, 285. 32 colored pls., 32 gravure pls., 6 text figs. Price $6.95.

Except to a few specialists, spiders are a little-known group of animals, and their lives are often strange and complex, and nearly always of absorbing interest. The introductory chapter of this work states that, "This book treats of the spiders of the United States and Canada and is concerned almost wholly with their habits and life histories, their morphology and peculiarities and also with their numbers and kinds." The author is one of our few specialists who has a sufficiently comprehensive background to have written this book.

It is not intended as a work to be used for the identification of spiders, though a classification system for families and higher systematic divisions is given. Its strength lies in the large mass of meticulous observations on the life histories of spiders, the relation of their habits to their morphological structure and to their association with other forms of life. The references to folk lore, legend and superstition, as they relate to spiders, will be found an attractive addition to the volume.

Besides the introduction, there are chapters on: the place of spiders in nature; the life of the spider; silk spinning and handiwork; courtship and mating; evolution of spiders; economic and

medical importance; the North American spider fauna; and a chapter each on the tarantulas, the cribellate spiders, the aerial web spinners and the hunting spiders. The very fine illustrations, both colored and black and white add much to the book. A glossary and short bibliography are given.

This is the first volume of a new series to be called *The Illustrated Naturalist.* If the quality is maintained on the level of this book, it will be a very fine series.—M. E. PHILLIPS.

WEBS IN THE WIND. The Habits of web-weaving spiders. By Winifred Duncan. The Ronald Press, New York. 1949. Pp. xv, 387. 74 pls., 101 text figs. Price $4.50.

The author admits in the preface of this work that it was written in an unorthodox fashion, but she has done it very charmingly. She says that she started out with no knowledge of spiders and with a resolve to rehash no information from other books, but rather to put down simply her personal day by day observations on the life and habits of spiders.

Most professional biologists would probably not entirely approve of this method of research, and as a matter of fact the author did not completely follow it. In this case also, her methods have apparently resulted in the assembly of much data not previously recorded. While valuable observations are presented in an exceedingly interesting manner, the scientist will occasionally be disappointed to read of the details of the habits of a species only to have its exact identity remain a mystery. However, this is not a serious shortcoming for the descriptions and figures will probably permit the specialist to identify the forms referred to. On the other hand this book can be a very definite inspiration to the amateur naturalist to embark upon studies of his own, for one is left with the impression that the author had a lot of fun.

Special attention is given, as indicated by the title, to spider webs and their construction. The reader is led to the full realization that here is a group of animals in which has been developed a different and very special dexterity all its own. Many tedious hours of observation have reaped rich rewards in this part of the work. The engineering skill, the capricious conduct and the wide range of methods used by the subjects form a fascinating account. The illustrations, by the author, are made with skill and artistic feeling.—M. E. PHILLIPS.

NOTICE. The December, 1949 issue of ENTOMOLOGICAL NEWS was mailed at the Post Office at Lancaster, Pa., on February 17, 1950.

List of Titles of Publications Referred to by Numbers in Entomological Literature in Entomological News.

1. American Midland Naturalist. Notre Dame, Indiana.
2. American Museum Novitates. New York, N. Y.
3. American Naturalist. Garrison-on-Hudson, New York.
4. Annals of Applied Biology. London.
5. Annals of the Entomological Society of America. Columbus, Ohio.
6. Annals and Magazine of Natural History. London.
7. Annales Academia Brasileira Sciencias. Rio de Janeiro.
8. Anales del Instituto de Biologia Mexico. Mexico City.
9. Anatomical Record. Philadelphia.
10. Arkiv för Zoologie. K. Svenska Vetenkapsakademien i. Stockholm.
11. Arquivos de Higiene e Saude Publica. São Paulo.
12. Biological Bulletin. Woods Hole, Massachusetts.
13. Bios, Rivista Biol. Geneva.
14. Boletin de Entomologia Venezolana. Caracas.
15. Boletin del Museo de Historia Natural "Javier Prado." Lima, Peru.
16. Boletin do Museu Nacional do Rio de Janeiro. Brasil.
17. Bull. Acad. Sci. (Izvestia Akad. nauk) U S S R (S. biol.).
18. Bulletin of the Brooklyn Entomological Society. New York.
19. Bulletin of Entomological Research. London.
20. Bulletin of the Museum of Comparative Zoology. Cambridge, Mass.
21. Bulletin of the Southern California Acad. of Sciences. Los Angeles.
22. C. r. Acad. Sci. (Doklady Akad. nauk) U S S R. Leningrad.
23. Canadian Entomologist. Guelph, Canada.
24. Canadian Journal of Research. Ottawa, Canada.
25. Ecological Monographs. Durham, North Carolina.
26. Ecology. Durham, North Carolina.
27. Entomologica Americana. Brooklyn Ent. Society, New York.
28. Entomological Monthly Magazine. London.
29. Entomological Record and Journal of Variations. London.
30. The Entomologist. London.
31. Florida Entomologist. Gainesville, Florida.
32. Frontiers. Philadelphia, Pennsylvania.
33. Great Basin Naturalist. Provo, Utah.
34. Iowa State College Journal of Science. Ames, Iowa.
35. Journal of Agricultural Research. Washington, D. C.
36. Journal of Animal Ecology. London.
37. Journal of Economic Entomology. Geneva, New York.
38. Journal of the Elisha Mitchell Science Society. Chapel Hill, N. C.
39. Journal of Entomology and Zoology. Claremont, California.
40. Journal of Experimental Biology. London.
41. Journal of Experimental Zoology. Philadelphia, Pennsylvania.
42. Journal of Heredity. Baltimore, Maryland.
43. Journal of the Kansas Entomological Society. Lawrence, Kansas.
44. Journal of Morphology. Philadelphia, Pennsylvania.
45. Journal of the New York Entomological Society. New York.
46. Journal of Parasitology. New York.
47. Journal of the Tennessee Academy of Sciences. Nashville, Tenn.
48. Journal of the Washington Academy of Sciences. Washington, D. C.
49. Memorias do Instituto Oswaldo Cruz. Rio de Janeiro.
50. Microentomology. Stanford University, California.
51. The Microscope and Entomological Monthly. London.
52. Mosquito News. Albany, New York.
53. Nature. London.
54. Nature. Washington, D. C.
55. La Naturaliste Canadien. Quebec.
56. Natural History. New York.

57. Occasional Papers, Mus. of Zool., Univ. of Michigan. Ann Arbor.
58. Ohio Journal of Science. Columbus, Ohio.
59. Opinions and Declarations. Intern. Com. Zool. Nomencl. London.
60. Pan-Pacific Entomologist. San Francisco, California.
61. Parasitology. London.
62. Proceedings of the Academy of Natural Sciences. Philadelphia.
63. Proceedings of the Biological Society of Washington. Wash., D. C.
64. Proceedings of the California Academy of Science. San Francisco.
65. Proceedings of the Entom. Soc. of Washington. Washington, D. C.
66. Proceedings of the Hawaiian Entomological Society. Honolulu.
67. Proceedings of the National Acad. of Sciences. Washington, D. C.
68. Proceedings of the Royal Entomological Society of London. Ser. A.
69. Proceedings of the Royal Entomological Society of London. Ser. B.
70. Proceedings of the Royal Entomological Society of London. Ser. C.
71. Proceedings of the U. S. National Museum. Washington, D. C.
72. Proceedings of the Zoological Society of London. London.
73. Psyche, A Journal of Entomology. Boston, Massachusetts.
74. Quarterly Journal of Microscopical Science. London.
75. Quarterly Review of Biology. Baltimore, Maryland.
76. Revista Academia Columbiana de Cien Exact. Fis. y Nat. Bogotá.
77. Revista Chilena de Historia Natural. Valparaiso, Chile.
78. Revista Instituto Salubridad y Enfermedades Tropicales. Mexico.
79. Revista Sociedad Mexicana de Historia Natural. Mexico City.
80. Science. Washington, D. C.
81. Scientific Monthly. New York.
82. Smithsonian Miscellaneous Collections. Washington, D. C.
83. Transactions of the American Entomological Society. Philadelphia.
84. Transactions of the Amer. Micros. Soc. Menasha, Wisconsin.
85. Transactions of the Illinois State Academy of Sciences. Springfield.
86. Transactions of the Kansas Acad. of Sci. Manhattan, Kansas.
87. Transactions of the Royal Canadian Institute. Toronto.
88. Transactions of the Royal Entomological Society. London.
89. U. S. Dept. of Agric., Farmer's Bulletins. Washington, D. C.
90. U. S. Dept. of Agric., Technical Bulletins. Washington, D. C.
91. University of California Publications in Entomology. Berkeley.
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98. Annals of Tropical Medicine and Parasitology. Liverpool.
99. Canadian Journal of Research. Section E, Medical Sciences, Ottawa.
100. Evolution. New York.
101. Mitteilungen der schweitzerischen entomologischen Gesellschaft, Bern.
102. Revue de Entomologie. Rio de Janeiro, Brasil.
103. Procedings of the Royal Society of London.
104. Anales de la Escuela Nacional de Ciencias Biologicas. Mexico.
105. Journal of Cellular and Comparative Physiology. Philadelphia.
106. Redia. Florence, Italy.
107. Annales de la Société Entomologique de France. Paris.
108. Bulletin de la Société Entomologique de France. Paris.
109. Notulae Naturae. Philadelphia.
110. L'Entomologiste. Paris.
111. Revista Brasiliera de Biologie. Rio de Janeiro.
112. Eos, Revista Española de Entomologia. Madrid.
113. Minist. de Agri. de la Nación, Inst. Sanidad Vegetal, Buenos Aires.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Bombidae, nearctic and neotropical, wanted for exchange, identification, or purchase. Will exchange in other groups for bumblebees. Barth Maina, Dept. Zool., Univ. of Chicago, Chicago 37, Ill.

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Butterflies of New England, principally from New Haven, Conn., for exchange. Louis Clarke, 28 W. Elm St., New Haven 15, Conn.

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Miridae (Capsidae)—American species wanted, with locality labels, in exchange for British species. D. Leston, F.R.E.S., 6 Frognal Rise, London N. W. 3, England.

Wanted—Entomological microscope in good condition; Spencer, Bausch & Lomb, or other standard make. David G. Shappirio, 4811 17th St., N.W., Washington 11, D. C.

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